

## AUTOMATIC DIGITAL IMAGE ENHANCEMENT

### ABSTRACT OF THE INVENTION

A method and apparatus for enhancing a digital image. First, human  
5 faces are located within a digital image. The digital image is then analyzed,  
including analysis of the regions determined to be human faces and the  
analysis of the digital image as a whole. A tone mapping function is then  
determined for enhancing the image quality of the digital image. The tone  
mapping function is determined using both the analysis of detected faces and  
10 the analysis of the image as a whole to obtain a tone mapping function that  
incorporates both psychological factors (e.g., average face region lightness and  
average picture lightness) and signal factors (e.g., digital resolution, face region  
contrast, histogram uniformity, and noise issue). The tone mapping function is  
then applied to the digital image so as to produce an enhanced digital image.  
15 The present invention is automatic and does not require that the user provide  
any input. In addition, because the method and apparatus of the present  
invention incorporates both psychological factors and signal factors, the  
resulting enhanced images are perceived to be of good image quality.